Increasing Livestock Grazing on Plateaus - Water Development for Loco Creek

The 1992 Wyoming Water Quality Assessment (305b) report listed Loco Creek's coldwater fishery as threatened by sediments and high temperatures. Livestock grazing and road development were the suspected causes of the impairments. With the Bureau of Land Management (BLM) and livestock grazing permittees determined to improve conditions, the Little Snake River Conservation District organized a project to address these nonpoint sources of pollution with a section 319 grant and funding from BLM.

Disturbed streambanks

Loco Creek flows into Savery Creek, which is a tributary to the Little Snake River. Its watershed, in the foothills of the Sierra Madre Mountains in southcentral Wyoming, is comprised of high plateaus and 11 miles of steep canyon created by Loco Creek. The plateaus are roughly 8,000 feet above sea level and the canyon floor is at an elevation of approximately 6,700 feet. Average annual precipitation for the area is 14 inches, and mountain shrub and sagebrush/grassland vegetation types predominate.
Land ownership within the watershed is 58 percent federal, 34 percent private, and 8 percent state. The Morgan-Boyer is a Bureau of Land Management grazing allotment almost totally within the watershed. It consists of a single pasture with few water developments.

Five permittees run cows and calves in the allotment, another permittee runs sheep, and an additional 12,000 sheep are herded through the allotment on their way to and from their mountain pastures (for spring and summer grazing). The sheep driveway crosses the lower end of Loco Creek. Livestock move to the canyon for shelter, shade, and water during hot periods and do not return to the plateaus. The result is overgrazed riparian vegetation and disturbed streambanks.

Solar-powered fences

The Little Snake River Conservation District and its partners formed a coordinated resource management group to help set priorities and coordinate various activities.
Solar-powered electric drift fences and two water developments were completed under a riparian improvement demonstration grant to increase livestock use of the plateaus. Additional funds were needed for water developments to provide adequate water on the approximately 18-square-mile watershed, and to complete other proposed activities.

The Conservation District received a section 319 grant to continue these improvements. The partners then constructed five additional water developments on the plateau, and divided the canyon bottom into three riparian pastures, by fencing and the use of natural topographic breaks. They also used prescribed sagebrush burns on portions of the plateau and canyon bottom to improve the forage base and increase herbaceous vegetation cover.
Next, they installed small in-stream structures to help control flows, increase bank water storage, and provide habitat for a beaver population. A plan to introduce beaver was abandoned, however, because the recovering riparian environment was not yet suitable and because beavers were likely to come from surrounding watersheds once suitable habitat was available.

Loco Creek

The project also included moving a portion of the canyon access road away from the stream and installing a culvert at a washed-out drainage crossing. The installation of water bars and drainage control measures on the road helped limit runoff to the stream. An information and education component ensured that other landowners and interested members of the public would understand the project and its results.

Taxa richness increases

A variety of monitoring methods have been employed by both the BLM and the Conservation District to evaluate success of the best management practices (BMPs). These monitoring methods included chemical water quality sampling, aquatic macroinvertebrate sampling, measuring stream channel cross sections, streambank well monitoring, riparian vegetation monitoring, and photo points. With the exception of chemical water quality, monitoring indicates that the project's goals are being reached and its BMPs have improved Loco Creek's aquatic and riparian environments.

Results of water chemistry analysis showed no apparent change in quality from previous monitoring data, but it is always difficult to detect changes in chemical water quality with limited samples taken over a short time period. Other monitoring methods indicate greater improvement.

Aquatic macroinvertebrate sampling has been part of the monitoring plan for this 319 project since 1994. Generally, all biologic indices evaluated indicate an improving trend in the aquatic macroinvertebrate community health. Total taxa richness statistically increased from 26 in 1994 to 34 in 1996.

As part of the initial BMP implementation and monitoring, the BLM established eight monitoring locations on Loco Creek to evaluate width to depth ratios. Monitoring results from 1996 indicate that five of the eight cross sections have shown reductions in width to depth ratios, indicating channel deepening and greater stability.

Eight streambank water wells were established in 1992. Wells were 5 to 10 feet deep and 10 to 100 feet from the stream channel. Water well data were collected from 1993 to 1996 and indicate that the overall riparian area function, to store water and allow slow release, is improving.

Both Nebraska sedge and willow are key riparian species along Loco Creek. Density and frequency of Nebraska sedge and frequency and height of willows increased during the monitoring period from 1992 to 1996.